

# CENTER FOR APPLIED MOLECULAR GENETICS

## CENTER

The Center for Applied Molecular Genetics (CAMG) was established in 1995 to identify specific DNA probes related to economically important qualitative and quantitative genetic traits in domesticated animals, e.g., cattle and pigs. DNA markers for traits such as back-fat thickness, feed conversion efficiency, and growth rate are of interest for swine, whereas in dairy cattle markers for annual milk and protein yield traits are being researched.

## TECHNOLOGY

Useful DNA based probes are being evaluated. The technologies being developed for selecting DNA markers include: random amplified polymorphic DNA (RAPD), restriction fragment length polymorphisms (RFLP) and sequence characterized amplified regions (SCAR). The objective is to identify probes that correlate with useful qualitative and or quantitative traits.

Swine markers showing correlations with specific traits are: back-fat (9), feed intake (4), and growth rate (11). The search for DNA markers in dairy cattle to correlate with milk and protein yield, has resulted in the identification of 3 useful markers.

## ACCOMPLISHMENTS

The economic value of the DNA markers and the methods for detecting them lies in the ability to identify desirable breeding animals before they mature and produce offspring thus reducing breeding costs significantly. Contacts with key swine and cattle breeding companies are being pursued and there are early indications of significant interest when the technology has been validated. Four markers for pig growth rates indicate a reduction of 15 days to market, which could be a significant economic benefit to the swine industry.

Commercialization opportunities in other areas are also under investigation. DNA markers have been established for a serious disease called round heart (spontaneous cardiomyopathy) in turkey, which could be used for the benefit of Utah's turkey industry.

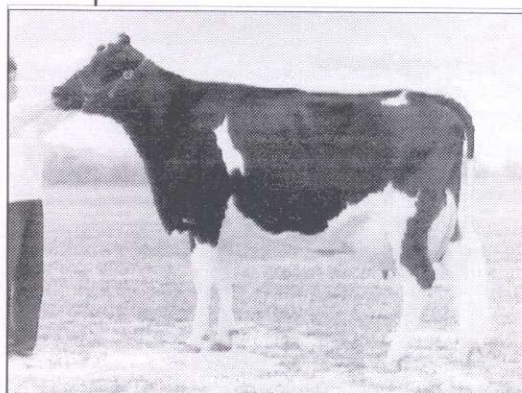
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*Can You Imagine...*

... a library of genetic markers which would allow breeders to select sire animals that exhibit desired and valuable physical traits before actual breeding takes place?

THE CENTER INVESTIGATES GENETIC MARKERS ASSOCIATED WITH DESIRABLE TRAITS IN SWINE AND CATTLE AND PROPOSES TO MARKET ANIMAL SCREENING CAPABILITIES.



- SONATA, from the BYU Dairy breeding stock. This animal, which has a phenomenal record of high milk production, is typical of animals being evaluated for important genetic markers.